

Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of claims

1. (currently amended) A homogeniser for continuous treatment of fluids at very high pressure, comprising:

at least one single-acting plunger with reciprocating motion from a guide chamber to a compression chamber from a fluid intake position to a fluid delivery position;

a plunger block for each said plunger, connecting the compression chamber with at least one intake valve and with at least one delivery valve for each said plunger;

an internal manifold connecting the compression chamber with the at least one intake valve and the at least one delivery valve;

at least one intake pipe and at least one delivery pipe both communicating with the manifold and respectively terminating in the intake valve and in the delivery valve,

wherein the at least one intake valve and the at least one delivery valve are housed in separate containers fixed to the block, and the homogeniser comprises at least one of the following units:

a first, dynamic seal unit positioned around the guide chamber and in contact with a surface of the plunger, designed to create a seal on the plunger during compression;

a second, static seal unit located close to an intersection between the compression chamber and the guide chamber, designed to contain pressure generated during compression between opposite surfaces of a compression chamber block and a housing flange for a dynamic seal;

a third, static seal unit located upstream and downstream of each said at least one intake valve and said at least one delivery valve and at an intersection between the manifold and the compression chamber, respectively housed in hollows designed to prevent fluid from escaping.

2. (previously presented) The homogeniser according to claim 1, wherein the first, dynamic seal unit comprises:

at least one first self-energising seal with an energising ring made of an elastomer;
at least one bearing assembly, coaxial with and alongside the first self-energising seal and equipped with a system for extraction from its housing.

3. (previously presented) The homogeniser according to claim 2, wherein the first self-energising seal comprises a single sealing lip and is made of a combination of plastic materials, high molecular weight PE and PEEK.

4. (previously presented) The homogeniser according to claim 2, wherein the bearing assembly is made of non-galling stainless steel.

5. (currently amended) The homogeniser according to claim [[1]] 2, wherein the second seal unit comprises a second self-energising static seal with dimensions and geometry which allow containment of very high pressures.

6. (previously presented) The homogeniser according to claim 1, wherein the third seal unit comprises:

at least one anti-extrusion ring with a rectangular cross-section and a circular ring cross-section in a direction orthogonal to an axis of symmetry;

at least a third self-energising seal inside a respective anti-extrusion ring .

7. (currently amended) The homogeniser according to claim 6, wherein each anti-extrusion ring is mounted to create an interference fit with the height of each of the hollows for a more effective mechanical seal.

8. (previously presented) The homogeniser according to claim 7, wherein the interference fit of each anti-extrusion ring is equal to 0.1 mm on the height of the hollow in which the ring is housed.

9. (previously presented) The homogeniser according to claim 1, wherein the internal surfaces of

the manifold, the intake pipe and the delivery pipe, exposed to the pressure of the fluid, are treated by manual polishing, radiusing of any edges at the intersections of concurrent holes, micro shot peening and electropolishing.

10. (previously presented) The homogeniser according to claim 1, wherein the plunger is made of a ceramic material.

11. (currently amended) The homogeniser according to claim 1, wherein a plunger seal apparatus is present, housed in the guide chamber and locked by a locking flange outside the compression chamber contained in the compression chamber block.

12. (previously presented) The homogeniser according to claim 1, wherein a lubricating coolant fluid feed channel is positioned on a locking flange immediately axially close to a first, dynamic seal unit.

13. (currently amended) The homogeniser according to claim 1, wherein the plunger comprises a guide consisting of a bushing housed in a locking flange and centered relative to [[a]] said housing flange by a concentric centring projection.

14. (currently amended) The homogeniser according to claim 13, wherein the housing flange is centered relative to the compression chamber block by cylindrical pins.

15. (currently amended) The homogeniser according to claim 1, wherein ~~a delivery manifold connects the delivery valve units~~ the at least one delivery valve includes a plurality of delivery valve units connected by a delivery manifold.

16. (previously presented) The homogeniser according to claim 1, wherein a support flange for the intake valve unit for each plunger is connected to a low pressure intake manifold.

17. (previously presented) The homogeniser according to claim 1, wherein each third, static seal

unit consists of a self-energising seal and an anti-extrusion ring and can be applied to all of the high pressure seal zones including a connection between the manifold and a homogenising valve.

18. (previously presented) The homogeniser according to claim 1, said homogeniser being equipped with an adjustable homogenising valve installed at an outlet of a delivery manifold.

19. (previously presented) The homogeniser according to claim 2, wherein said system for extraction comprises a thread.

20. (currently amended) The homogeniser according to claim 4, wherein said non-galling stainless steel is ~~Nitronic 60~~ UNS S21800.

21. (previously presented) The homogeniser according to claim 5, wherein the second self-energising static seal is fitted with an external anti-extrusion ring.

22. (previously presented) The homogeniser according to claim 10, wherein said ceramic material is pure silicon nitride, Si_3N_4 .

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